

UNIVERSITÄT  
DUISBURG  
ESSEN

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UNIVERSITY OF DUISBURG-ESSEN

FACULTY OF PHYSICS

ADVANCED LABORATORY

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## Statistical time series analysis

Brownian motion, stock prices and temperature data

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**Group #**

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Tutor's name

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# 1 Introduction

First, some references, like [1].

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Figure 1: A nice plot

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$$\bar{x} = \frac{1}{n} \sum_{i=1}^{i=n} x_i = \frac{x_1 + x_2 + \dots + x_n}{n}$$

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$$\int_0^{\infty} e^{-ax^2} dx = \frac{1}{2} \sqrt{\int_{-\infty}^{\infty} e^{-ax^2} dx \int_{-\infty}^{\infty} e^{-ay^2} dy} = \frac{1}{2} \sqrt{\frac{\pi}{a}}$$

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$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-p \pm \sqrt{p^2 - 4q}}{2}$$

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$$\frac{\partial^2 \Phi}{\partial x^2} + \frac{\partial^2 \Phi}{\partial y^2} + \frac{\partial^2 \Phi}{\partial z^2} = \frac{1}{c^2} \frac{\partial^2 \Phi}{\partial t^2}$$

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## 2 Brownian motion

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$$\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{ab}$$

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### 3 Stock prices

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## 4 Temperature

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## 5 Conclusion

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## References

- [1] Albert Einstein. Zur Elektrodynamik bewegter Körper. (German) [On the electrodynamics of moving bodies]. *Annalen der Physik*, 322(10):891–921, 1905.

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